

# ***HAEMOPHILUS INFLUENZAE***

## **INVASIVE DISEASE** (under age 5, excluding otitis media)

### DISEASE REPORTING

#### ***In Washington***

Since the widespread adoption of routine childhood immunization against *Haemophilus influenzae* type b (Hib) in 1991, the rates of invasive Hib have fallen dramatically. DOH receives 6 to 11 reports of invasive Hib per year, with rare fatalities.

#### ***Purpose of reporting and surveillance***

- To identify susceptible preschool-age children who may have been significantly exposed to a Hib case.
- To educate potentially exposed persons about signs and symptoms of disease, thereby facilitating early diagnosis.
- To identify contacts and recommend preventive measures, including antibiotic prophylaxis and immunization.
- To identify situations of undervaccination or vaccine failure.

#### ***Reporting requirements***

- Health care providers: **immediately notifiable to Local Health Jurisdiction**
- Hospitals: **immediately notifiable to Local Health Jurisdiction**
- Laboratories: no requirements for reporting
- Local health jurisdictions: notifiable to DOH Communicable Disease Epidemiology within 7 days of case investigation completion or summary information required within 21 days

### **CASE DEFINITION FOR SURVEILLANCE**

#### ***Clinical criteria for diagnosis***

Invasive disease caused by *Haemophilus influenzae* type b may produce any of several clinical syndromes, including meningitis, bacteremia, epiglottitis, or pneumonia. Reports are required only for cases occurring in individuals under five years of age and exclude otitis media.

**Laboratory criteria for diagnosis**

- Isolation of *H. influenzae* type b from a normally sterile site (e.g., blood or cerebrospinal fluid (CSF) or, less commonly, joint, pleural, or pericardial fluid).

*Positive antigen test results from urine or serum samples are unreliable for diagnosis of *H. influenzae* type b disease.*

**Case definition**

- Probable: a clinically compatible case with detection of *H. influenzae* type b antigen in CSF.
- Confirmed: a clinically compatible case that is laboratory confirmed.

**HAEMOPHILUS MENINGITIS****A. DESCRIPTION****1. Identification**

In the era before widespread use of Hib conjugate vaccines, this was the most common bacterial meningitis in children aged 2 months to 5 years in the US. It is usually associated with a bacteremia. The onset can be subacute but is usually sudden; symptoms include fever, vomiting, lethargy and meningeal irritation, with bulging fontanelle in infants or stiff neck and back in older children. Progressive stupor or coma is common. Occasionally, there is a low grade fever for several days, with more subtle CNS symptoms.

Diagnosis may be made by isolation of organisms from blood or CSF. Specific capsular polysaccharide may be identified in CSF by CIE or LA techniques.

**2. Infectious Agent**

Most commonly *H. influenzae* serotype b (Hib). This organism may also cause epiglottitis, pneumonia, septic arthritis, cellulitis, pericarditis, empyema and osteomyelitis. Other serotypes rarely cause meningitis.

**3. Worldwide Occurrence**

Worldwide; most prevalent among children aged 2 months to 3 years; unusual over the age of 5 years. In developing countries, peak incidence is in children less than 6 months of age; in the US, in children 6-12 months of age. In the prevaccine era in the US, about 12,000 cases of Hib meningitis occurred among children less than 5 years compared with about 25 reported cases in 1998. As of the late 1990s, with widespread vaccine use in early childhood, Hib meningitis has virtually disappeared; more cases now occur in adults than in young children. Secondary cases may occur in families and day care centers.

**4. Reservoir**

Humans.

**5. Mode of Transmission**

By droplet infection and discharges from nose and throat during the infectious period. The portal of entry is most commonly the nasopharynx.

**6. Incubation period**

Unknown; probably short, 2-4 days.

**7. Period of communicability**

As long as organisms are present, which may be for a prolonged period even without nasal discharge. Noncommunicable within 24-48 hours after starting effective antibiotic therapy.

**8. Susceptibility and resistance**

Susceptibility is assumed to be universal. Immunity is associated with the presence of circulating bactericidal and/or anticapsular antibody, acquired transplacentally, from prior infection or from immunization.

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**B. METHODS OF CONTROL****1. Preventive measures:**

- a. Routine childhood immunization. Several protein polysaccharide conjugate vaccines have been shown to prevent meningitis in children more than 2 months of age and are licensed in the US both individually and combined with other vaccines. Immunization is recommended starting at 2 months of age, followed by additional doses after 2 months; dosages vary with the vaccine in use. All vaccines require boosters at 12-15 months of age. Immunization is not routinely recommended for children more than 5 years of age.
- b. Monitor for cases occurring in susceptible population settings, such as day care centers and large foster homes.
- c. Educate parents about the risk of secondary cases in siblings less than 4 years old and the need for prompt evaluation and treatment if fever or stiff neck develops.

**2. Control of patient, contacts and the immediate environment:**

- a. Report to local health authority.
- b. Isolation: Respiratory isolation for 24 hours after start of chemotherapy.

- c. Concurrent disinfection: None.
- d. Quarantine: None.
- e. Protection of contacts: Rifampin prophylaxis (orally once daily for 4 days in a 20 mg/kg dose, maximal dose 600 mg/day) for all household contacts (including adults) in households where there are one or more infants (other than the index case) less than 12 months of age or with a child 1-3 years of age who is inadequately immunized. When two or more cases of invasive disease have occurred within 60 days and unimmunized or incompletely immunized children attend the child care facility, administration of rifampin to all attendees and supervisory personnel is indicated. When a single case has occurred, the use of rifampin prophylaxis is controversial.
- f. Investigation of contacts and source of infection: Observe contacts under 6 years old, and especially infants including those in household, day care centers and nurseries for signs of illness, especially fever.
- g. Specific treatment: Ampicillin has been the drug of choice (parenteral 200-400 mg/kg/day). However, since about 30% of strains are now resistant due to beta-lactamase production, ceftriaxone, cefotaxime or chloramphenicol is recommended concurrently or singly until antibiotic sensitivities are known. The patient should be given rifampin prior to discharge from the hospital to assure elimination of the organism, if they received treatment with antibiotics other than cefotaxime or ceftriaxone.

### **3. Epidemic measures**

Not applicable.

### **4. International measures**

None.